

U. S. Bureau of Reclamation

***Great Plains Region
Water Conservation Field
Services Program***

***FY2001 Program Activity
Highlights***

Background -

'The Mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.'

The Reclamation Program was created by the Reclamation Act of 1902 to reclaim the arid West and to provide economic stability in the 17 western states by developing irrigation projects.

Over time, these single purpose projects gave way to the development and construction of multipurpose water resource projects with increasingly greater emphasis placed on the efficient use of developed water supplies, the protection of societal and environmental values, and the protection of the Federal investment and it's infrastructure.

In 1997, Reclamation initiated the Water Conservation Field Service Program (WCFSP) to encourage water conservation and efficient use of water supplies on Federal Reclamation projects, as well as foster improved water management on a watershed basis throughout the western states.

The purpose of the WCFSP is to actively encourage water conservation, assist irrigation and other water districts in developing and implementing water conservation plans, and complement and support other state and local conservation efforts. In addition, it helps Reclamation fulfil other obligations under other Federal directives, i.e., Fish and Wildlife Coordination Act of 1958 and the Endangered Species Act of 1973. It provides Reclamation the opportunity to broaden partnerships with

other Federal and non-Federal agencies in fostering improved watershed management.

While the program emphasis under RRA is to work with Reclamation projects, the WCFSP is also designed to contribute to watershed management partnerships outside of Reclamation projects in order to improve fish and wildlife habitat associated with water systems or water supplies affected by Reclamation projects.

The Great Plains Region administers Reclamation projects in Montana, North and South Dakota, Colorado, Wyoming, Nebraska, Kansas, Oklahoma and Texas and has a great diversity of irrigation and non-irrigation related constituents. In addition to irrigation districts, Area Office WCFSP Coordinators work with tribal entities, rural water systems, non-profit organizations and municipalities on water management and conservation issues.

Area, Regional, and Denver offices provide technical and financial assistance in the four emphasis areas of the WCFSP:

- Conservation planning
- Conservation education
- Demonstration of innovative conservation technologies
- Implementation of conservation measures.

Following is a summarization of selected activities undertaken by program partners and Reclamation in FY 2001. The activities are organized by the four program emphasis areas.

— ***Conservation Planning*** —

DKAO - Conservation Plan Development -

- DKAO encouraged water districts to develop and implement water conservation and management plans. Technical assistance and guidance was offered to all interested water users in preparing conservation plans. Seven conservation plans from irrigation entities and six from municipal and rural water entities have been received and commented on by DKAO. Of the ten irrigation entities in the Dakotas receiving Reclamation water, only three are required to submit plans under RRA.

DKAO - Rural Water Systems -

- DKAO was involved in the planning, design, construction, operations and maintenance of

numerous rural water systems in North Dakota and South Dakota. Project sponsors of these systems are required or encouraged to develop a water conservation plan. DKAO staff will review these plans and discuss potential modifications.



Installing water line on the Mni Wiconi Rural Water System, SD.

DKAO worked with the South Dakota Association of Rural Water Systems (SDARWS) and North Dakota Rural Water Systems Association (NDRWSA) to conduct Water Needs Assessments and provide technical and educational assistance on the rural water distribution systems.

ECAO - Arkansas Valley Salinity Study - Colorado State University (CSU) -

- This cost-sharing project educates irrigators and water managers in the Arkansas Valley about salinity and waterlogging problems and their solutions through field days and workshops. Project findings will be disseminated through appropriate venues and the interaction and feedback of decision-makers will be sought. Efforts will be made to gain direct input in the development of alternative solutions for consideration in CSU model development.



ECAO - South Platte Basin Salinity Study – Northern Colorado Conservancy District -

- This project entails a six-year data collection effort of salinity within Northern’s boundaries. Northern’s Irrigation Management Service (IMS) group will be

collecting water and soil samples. They will also be using the dual EM-38 to determine levels of salinity within fields. Project findings will be disseminated through appropriate venues and the interaction and feedback of decision-makers will be sought.

MTAO - Canal Efficiency Study - Milk River Project –

- Through a cooperative agreement, provide technical and financial assistance to initiate a study to develop a water budget and determine



Hydraulic Technicians conduct a discharge measurement as part of the Milk River Canal Efficiency Study.

canal efficiencies of the 120,000 acre Milk River Project. Study will identify problem areas and provide the Project with potential solutions.

NKAO - Conservation Plan Development -

- NKAO’s priority was to work with irrigation districts to update water conservation plans. Focus was on irrigation districts with historical water supply shortages, such as Frenchman Valley, H & RW, Almena, Kirwin, and Webster Irrigation Districts.

NKAO - Water Supply Contract Renewals – Republican River Basin -

- During contract renewal negotiations, districts in the Republican River Basin submitted variance proposals that would give the districts a 40-year contract, compared to the 25-year contract offered by Reclamation. Commitments to water conservation and the environment were stressed in the proposals, which provided an outline for each district’s water conservation plan. The NKAO provided assistance in updating water management plans from the Frenchman Valley, Almena, and Kansas Bostwick Irrigation Districts.

NKAO provided assistance on draft plans from the Frenchman-Cambridge Irrigation District and the Bostwick Irrigation District in Nebraska.

NKAO - Water Supply Contract Renewals – Solomon River Basin -

- During the Solomon River Basin Contract Renewal process, water conservation was identified as an area of focus. NKAO provided planning assistance to the Kirwin and Webster Irrigation Districts in updating of their water conservation plans.

WYAO - State Water Conservationist Position - Wyoming Water Development Commission -

- This is a cooperative effort between the State of Wyoming and Reclamation to improve water management and conservation within the state. Wyoming has an interest in the success of the WCFSP, and the Wyoming Water Development Office (WWDO) has significant expertise in the area of water management improvements, evaluations, etc. This effort will reduce duplication of efforts and provide for a larger technical resource pool to draw from. Also, it is anticipated WWDO will be capable of working most efficiently with water users in providing assistance in developing and implementing water conservation plans.

OTAO - Conservation Plan Development -

- OTAO has two irrigation districts and 11 municipal water suppliers required to submit water conservation plans. As of April 2002, all of those entities have submitted plans. During 2001, with assistance from Reclamation, the Foss Reservoir Master Conservancy District completed their water conservation plan. Additionally, plans were developed for Donna ID, La Feria ID, and Central Oklahoma Master Water Conservancy District.

— Conservation Education —

DKAO – Education Activities -

- The DKAO offers financial assistance to water entities who wish to participate in education and training activities related to water management, and water operations. Approximately 20 people have received financial assistance through the DKAO

WCFSP to attend training conducted by Reclamation.

- DKAO entered into agreements with North Dakota State University (NDSU) and South Dakota State University (SDSU) to provide educational information and activities to Reclamation water users. The activities included workshops and field-days as forums to discuss irrigation management, irrigation scheduling, estimating crop water use, and improving irrigation efficiencies.
- SDSU is installing and renovating weather stations in Reclamation Irrigation Districts with funding provided by DKAO. SDSU will use the facilities to develop and disseminate crop water use information through web sites which will be developed specific to each irrigation district. Plans are to provide soils, water, cropping information, and maps to producers through the web site.
- DKAO sponsors and participates in annual water conventions in North Dakota and South Dakota in cooperation the South Dakota Association of Rural Water Systems and North Dakota Rural Water Systems Association.



Bismarck, ND, “Annual NDRWSA Convention.”

DKAO - Water Festivals -

- DKAO participates in Children’s Water Festivals in North Dakota and South Dakota as an opportunity to educate elementary grade students in all facets of water.



Dickinson, ND “Make A Splash” water festival. J. Weigel, (DKAO) teaching about Reclamation Dams and letting kids build a dam.

ECAO - Water Festivals – Northern and Southeastern Colorado Conservancy Districts, and Local Municipalities-

- A Children’s Water Festival is an opportunity to educate 4th and 5th grade students in all facets of water. Reclamation has helped to financially sponsor about 7,000 students along the Front Slope of Colorado.



Water Festival Activity Boulder, CO

ECAO - Watershed - Boulder Creek Watershed Initiative -

- This project helps protect the water resources of the Boulder Creek Watershed by providing opportunities for local students and adults to participate in monitoring, cleaning, and restoring local streams and wetlands.

ECAO - Family Water Festival - Colorado Springs Utilities -

- Financial assistance provided to the City of

Colorado Springs Utilities for a family based water festival. In 2001, attendance was approximately 4,000 people.

ECAO - Rain gauges in Northern Colorado - Colorado Climate Control -

- This program gives the community in Northern Colorado an opportunity to learn more about their local weather. This is accomplished by providing participants with ECAO sponsored rain gauges. They report to the Colorado Climate Control Center in Fort Collins, any precipitation that occurs throughout the year.

ECAO - Learn to Be Water Wise - National Energy Foundation -

- This program is targeted for 4th or 5th grade students. They are provided a kit containing water saving devices and education on water conservation. This program reaches over 7,000 students statewide.

ECAO - Discovery Center Science Museum Water Exhibit - Fort Collins Water Utilities -

- Through a cooperative agreement, a display of the water cycle will be developed and installed in northern Colorado. A control panel with questions and answers will be associated with the display to further enhance knowledge of the water cycle.

ECAO - WCFSP Resource Center -

- The center has water management information, videos, posters, books, publication, and water conservation tokens and prizes, and all is available to the public.



Display of tokens with Otto Otter

MTAO - Rolling River Trailers-Montana Association of Conservation Districts -

- Provided funding for the purchase of three

rolling river trailers for the Montana Association of Conservation Districts. Trailers provide a portable model of a watershed for use in local educational events such as county fairs, conservation district range days, etc.



The Rolling River Trailers make their debut at the Montana Association of Conservation District's annual meeting.

MTAO - Milk River Watershed News -

- In cooperation with the Montana Department of Natural Resources and Conservation, MTAO sponsors a quarterly newsletter that is mailed to irrigators in the Milk River Project, along with local, state, and Federal officials, sportsman's groups, and other local citizens. Newsletter is designed to provide timely information to basin residents on issues that have the potential to impact them.

NKAO - Children's Groundwater Festival -

- NKAO was a major sponsor of this festival, which is held annually in Grand Island, NE. Over 3000 grade school children attend the festival to learn about groundwater and associated water resources. Reclamation provides funding assistance through the Groundwater Foundation and hosts a presentation each year at the festival.

NKAO - Project WET (Water Education for Teachers) -

- This is an interdisciplinary water education program to advise and promote the awareness, appreciation, knowledge, and stewardship of water resources. In 2001 Project WET expanded to supply education seminars to upper level college students who will soon be entering the educational field. The NKAO entered an agreement to provide assistance to the Nebraska 4-H Development Foundation for support of Project WET,

along with the University of Nebraska Cooperative Extension, the Nebraska Forest Service, and the Nebraska Game & Parks Commission.

NKAO-OTAO – Great Plains Foundation -

- The NKAO combined with the OTAO in providing funding assistance to The Great Plains Foundation for assisting with the Foundation's annual water symposium.

NKAO – Surge Irrigation Training

- The NRCS, the University of Nebraska Extension Service, and the NKAO provided surge valve and surge irrigation training for Irrigation District and private irrigators in the Republican River Basin. This training was held in conjunction with the popular surge valve loaner program that the NKAO has been sponsoring with the Irrigation Districts, NRCS, and NRDs.

NKAO – NRCS – Husker Harvest Days -

- The NRCS and NKAO combined to host a pipe-water measurement display at the 2001 Husker Harvest Days. Various types of pipe meters were displayed. The NRCS, University of Nebraska Extension Service, Reclamation's Water Resources Research Lab (WRRL), and the NKAO are working together to develop a pipe measurement video.

NKAO – Flowmeter Testing and Field Operator Training Facility -

- The NKAO provided technical and funding assistance through agreement with the Kansas Division of Water Resources (KDWR) for the installation of a Flowmeter Testing and Field Operator Training Facility at the University of Kansas (KU). This facility will provide the KDWR and KU a traceable, defensible, flow measurement standard, which the KDWR can use to facilitate the compliance monitoring of groundwater usage throughout the state of Kansas.

NKAO – Mid-High Plains Education Initiative -

- NKAO entered into an agreement with the Groundwater Foundation to begin the Mid-High Plains Education Initiative. This project's initial target was to continue water resource discussions between all interests, with the first area of focus being the Republican River Basin. Participating groups include irrigation districts, natural resource

districts, groundwater guardian groups, public power agencies, university educators, private irrigators, and other local, state, and federal agencies.

OTAO - Texas Agricultural Extension Service, Texas A&M University System -

- Financial assistance was provided to help establish a new agricultural engineering position for the Irrigation District Rapid Assessment Tool Development Program (RAT). The goal of this program is to develop a complete set of procedures and tools that can be used to quickly identify the sources of water losses and potential savings for irrigation districts.

WYAO - Spider Island - Outdoor Classroom - Poison Spider School -

- Reclamation provided financial assistance to the Poison Spider School to help establish Spider Island: An Outdoor Classroom. Spider Island will be an ongoing study focusing on hands-on science and natural resource education for seventh and eighth grade students. Spider Island will promote the wise use of water and other natural resources through hands-on classroom presentations and individual study. The students will study the hydraulic cycle, watersheds, and plant and animal life along Poison Spider Creek.



WYAO - Water Conservation Education Program - Laramie County Conservation District -

- Reclamation provided financial assistance to the Laramie Conservation District (LCCD) to develop a Water Conservation Education Program. The LCCD currently offers many environmental education programs for grades K-12 and beyond. Funding from this grant request will enable the LCCD to develop and implement a water conservation program, which it presently lacks.

WYAO - Wyoming Project WET - Teton Science School -

- Project WET (Water Education for Teachers) is a national nonprofit water education program for educators and students, grades K-12. Reclamation entered into a cooperative agreement with Project WET to provide funds for the purchase of manuals, and to publish a Correlation Manual and cross reference chart to correlate Project WET activities to the Wyoming State Education Performance Standards.

WYAO - Children's Water Festival - Central Wyoming Regional Water System -

- A cooperative agreement between Reclamation and the Central Wyoming Regional Water System provided funds to assist in the 2001 Wyoming State Children's Water Festival. The Festival provided a unique opportunity to inform large numbers of school children distributed over a large



geographic area, of the importance of protecting water resources, responsible water use, and pro-active pollution prevention. This year's festival attracted over 1,500 4th and 5th grade students from all over the state. Students were able to learn about reservoir uses at a new display purchased with a grant from Reclamation. The 3-dimensional cross-section of a dam and reservoir includes a panel that lists names and functions of the various reservoir elements.

WYAO - Water Education Calendar - Utah State University, International Office for Water Education -

- WYAO was part sponsor in the purchase of water education calendars. The calendars contain water-related artwork created by elementary students, and include questions and facts about water. The calendars assist

teachers and students in gaining a better understanding of the role water plays in our lives and how we can help deal with future problems.

WYAO - Water Conservation Connection, Natural Science Program - University of Wyoming, College of Education -

- Reclamation entered into a grant agreement for the sponsorship of the Wyoming Conservation Connection Program to promote the education of water conservation principles to Wyoming school children and teachers. 2001 was the third year Reclamation has sponsored this program.

GPRO – International Project WET – Publication of Discover the Rio Grande Workbook –

- The Great Plains Regional Office provided funds, along with Upper Colorado Regional Office, to International Project WET to develop and print the ‘Discover the Rio Grande’ workbook in the Spanish language. This is a children’s informational workbook which will be distributed on both sides of the U.S. – Mexican border in both English and Spanish languages.

— Conservation Technology Demonstration —

DKAO – Demonstration Activities -

- DKAO has agreements with SDSU and NDSU to demonstrate and evaluate innovative conservation technologies to water users. Surge valves, mini-center pivots, and alternative crops with lower water requirements are some of the technologies being demonstrated in South Dakota. NDSU will be demonstrating and evaluating new sprinkler technologies, using a handheld computer and mini-weather station to monitor crop water use, and low water pump intake structures for water users.

DKAO - Canal Sealant and Seepage Reduction Demonstration Project –

- A cooperative agreement for conservation demonstration and implementation with Buford-Trenton Irrigation District, ND has allowed the demonstration of a spray-on canal sealant to reduce canal seepage.

Irrigation districts cannot afford the expense of lining large canals, or replacing canals with pipelines, without substantial financial assistance. The use of a spray-on canal sealant to reduce canal seepage may be a cost effective alternative for districts to consider.



Custom built, large volume sprayer built to apply canal sealant. Boom extends across entire canal.

DKAO - Xeriscape Landscape Demonstration – Fargo, ND -

- DKAO entered into a cooperative agreement with the City of Fargo, ND to conduct a landscape water conservation demonstration. Data will be compiled and analyzed comparing conventional lawn water use to



Xeriscape landscapes.
Home of a Fargo Xeriscape study participant.

DKAO - Xeriscape Garden -

- Xeriscape demonstration and educational gardens are being developed in cooperation with the cities of Fargo, ND and Rapid City, SD. The gardens will educate local landowners about the type of plants and landscape materials available to incorporate in their own lawns. A variety of local entities contributed time and funds to the garden. The Fargo Xeriscape education and demonstration garden is under construction.



Fargo Xeriscape education and demonstration garden under construction.

ECAO - Xeriscape Demonstration - Metro Water Conservation, Inc -

- In cooperation with Reclamation's Washington and Denver Offices, continued participation in one of five Water Conservation Challenge Grants. This six year cost-sharing agreement with the MWCI is to conduct a landscape water conservation demonstration. Data will be collected, compiled, and formatted for use in a broader framed analysis. Participants include the cities of: Fort Collins, Boulder, Colorado Springs, Arvada and Denver. Study will end in 2002.

ECAO - Xeriscape Garden – Southeastern Colorado Conservancy District -

- The xeriscape garden is the first of its kind in the Pueblo area. This garden educates local users about the type of plants and hardscape to incorporate in their own lawns. The garden is located at the SE headquarters. A variety of local entities contributed time and funds to the garden.

ECAO - Canal Seepage Reduction Demonstration Project - Colorado State University Cooperative Extension Service -

- This project demonstrates reduced canal seepage through the use of polymers. Due to the amount of surface water lost in canals in the Arkansas River Basin, crop yield in some areas is being diminished. With expanded residential development, high water tables are causing problems for homeowners. Canal companies cannot afford the expense of lining canals. The use

of polymers may be an effective



Polymer being applied in a lateral

means of reducing seepage at an affordable price. Findings from this project have been compiled and are available through Reclamation or the Extension Service for review.

ECAO - Evapotranspiration rates for Xeriscape plants – Northern Colorado Conservancy District -

- This project monitors the growth and water usage of 45 typical landscape plants (15 species with three replications of each). Weekly measurements are taken of the amount of water used, with daily observation of two species at a time, rotated through out the growing season to obtain daily data. The plants would be established in the drainage lysimeters and the measured area covered by the plants would be related to an equivalent coverage area of turfgrass. We can then estimate by the size of plant the amount of water being used compared to turfgrass. The project will be completed after the 2002-



growing season.

MTAO - Remote Monitoring Project-Fort Shaw

Irrigation District –

Ramp flume installed as part of the remote monitoring demonstration project.

- Through a cooperative agreement, provided technical and financial assistance for the installation of a remote monitoring system at key points in the irrigation district's canal conveyance system. The system allows the District to have real-time monitoring of the canal system and make adjustments when necessary to maximize the water use efficiency.

MTAO - Canal Lining-Buffalo Rapids Project -

- Installed 200,000 ft² of exposed 60-mil geomembrane lining in the Glendive main canal to address a high seepage section of the canal. The lining project was incorporated into Reclamation's canal-lining demonstration project.

NKAO – Limited Irrigation Management Strategies -

- Reclamation has been providing financial assistance to the University of Nebraska since 1996 for a Limited Irrigation Strategies study in the Republican River Basin. The project demonstrates implications of alternative irrigation management strategies on water use and profitability. Four different irrigation management strategies have been conducted at each six sites, current farmer management, university best management practices, late initiation, and limited allocation. Interest in this study has been high due to groundwater pumping restrictions in the Upper Republican Natural Resource District (NRD) and the groundwater metering measures implemented by the Middle and Lower Republican NRDs.

NKAO – Surge Valve Loaner Program -

- The surge valve loaner program began in 1997 in the Mirage Flats Irrigation District. Reclamation works with the Natural Resources Conservation Service (NRCS), the local Natural Resource District, and the University of Nebraska Extension Service to educate and assist the irrigators with field setup, operation, and programming of surge valves. District irrigators can use a Reclamation provided surge valve free of

charge for one year. At the end of the year the irrigator can purchase the valve from the District or return it to the District. The District uses these funds to purchase additional valves that will be used the next irrigation season.

NKAO – Canal Trash Screening Devices -

- NKAO entered into an agreement with the Twin Platte NRD for the demonstration of various canal trash screening devices. Irrigators in the Twin Platte NRD have been reluctant to install water meters or to utilize more efficient methods of irrigation (such as surge, gated pipe, and sprinkler) because they feel that surface water cannot be sufficiently screened. This project provides assistance for a minimum of three different types of canal screening devices used by other canal systems that will be displayed throughout the Twin Platte NRD.

NKAO and WYAO – Elbow Meter Technology -

- The NRCS, Reclamation's Water Resource Research Lab, the Wyoming Area Office, and the NKAO are working together on a research and demonstration project that will develop and demonstrate an inexpensive elbow meter that will be used to measure pipe flow in the Nebraska panhandle. The WRRL is completing the lab testing of these elbow meters and the field demonstration will begin in the 2002 irrigation season.

NKAO – Sprinkler Irrigation Demo – KSU -

- The NKAO entered into an agreement with Kansas State University (KSU) to provide assistance with a sprinkler irrigation demonstration project in the Kansas Bostwick Irrigation District No. 2. The demonstration will compare water use efficiency between sprinkler and furrow irrigation, scheduling sprinkler irrigation applications for corn and soybeans, tillage effects on water use and infiltration, uniformity of water delivery, and fertilizer and pesticide delivery through sprinkler systems

WYAO - Subsurface Drip Irrigation - University of Nebraska, Panhandle Research and Extension Center -

- This project will demonstrate the potential for using subsurface drip irrigation (SDI) to improve water management and conserve surface water supplies in the North Platte

River Valley. It will aid the public in developing knowledge on the installation, use, and maintenance of a SDI system in the local area, and provide irrigators an opportunity to observe the SDI in a field setting.

WYAO - Small Scale Agricultural Irrigation Efficiency Improvement Demonstration and Education Program - Hot Springs County Conservation District-

- Reclamation provided financial assistance through a cooperative agreement to Hot Springs Conservation District, to conduct a small-scale agricultural irrigation demonstration and education program. The project will involve the design, installation, and monitoring of a new low-pressure mini center pivot. The program will encourage the awareness of new and existing technologies and help producers improve irrigation efficiency by providing information and education through workshops, demonstration sites, and publications.

WYAO - Big Horn Basin Irrigation Water Management Program - Washakie County Conservation District -

Reclamation provided funds to the Washakie County Conservation District to continue and improve the Big Horn Basin Irrigation Water Management Program. The program provides local residents in three counties with technical assistance, information, and education through workshops, demonstration sites, and publications. This program also gives school students the opportunity to learn first hand, in the field, how production agriculture uses modern technology to assist in efficient water usage and why conservation is increasingly a critical concern facing Wyoming citizens.

WYAO - Xeriscape Demonstration - University of Wyoming Cooperative Extension Service -

- The WYAO through a cooperative agreement funded the University of Wyoming Cooperative Extension Service for the construction of several high profile xeric landscapes for demonstration/educational purposes. The program is planned to have an associated xeric media campaign using

radio/TV/newspaper to increase public knowledge and awareness about efficient water use in the landscape. Also planned is development of an educational mobile display highlighting xeriscape principals, and a regional xeriscape conference.

WYAO - Surge-Valve Demonstration Program - University of Nebraska, Panhandle Research and Extension Center-

- Through a cooperative agreement, Reclamation provided funds to the university for providing demonstrations to water user entities of surface-irrigation water conservation techniques, including surge irrigation water management. These demonstrations will help water users identify conservation measures to include and implement in their water conservation plans.

— ***Implementation of Conservation Measures*** —

DKAO – Implementation of Measures -

- DKAO has cooperative agreements with 4 districts to cost-share the implementation of approved conservation measures on approximately 82,000 acres of irrigated farmland. The measures are: implementing water measurement and accounting systems; installing and rehabilitating water measurement



Belle Fourche ID, Angostura Unit, SD - Replacing open lateral with buried pipeline.

structures; calibrating water control structures; purchasing flow measurement equipment; testing pumping plant efficiency and pump performance; replacing open laterals with pipelines; purchasing surge valves and gated pipe; converting from flood irrigation to sprinkler systems; converting sprinkler

systems to drop nozzles and lower pressure; rebuilding pumps to provide optimum pressure and field uniformity; utilizing a spray-on canal sealant; providing training to district personnel on water measurement, water district operation and maintenance, and canal operation and automation.

DKAO - Bridging-the-Headgate Programs -

- DKAO entered into a "Bridging-the-Headgate" (B-T-H) cooperative agreement with Belle Fourche Irrigation District and Butte County Conservation District (working through the District Conservationist for the Natural Resources Conservation Service). Agreement is to input project and local utility facilities into a Geographical Information System database, provide technical assistance to the District and local irrigators, and to collect water quality data within the project.
- DKAO also participates in a B-T-H cooperative agreement with North Dakota State University, and the Garrison Diversion Conservancy District to cost-share an Extension Irrigation Specialist. An objective of that agreement is the collaboration on educational and demonstration activities related to water conservation within the state.

ECAO - South Platte Watershed Forum – Northern Colorado Conservancy District and other entities in the South Platte Basin -

- An adult based educational opportunity for interested people. The forum focuses on issues in the South Platte Basin.

ECAO - Arkansas River Basin Watershed Forum -Southeastern Colorado Conservancy District -

- An adult based educational opportunity for interested people. The forum focuses on issues in the Arkansas Basin.

ECAO - Update and Integrate Irrigation Scheduling Program into Web Page - Northern Colorado Conservancy District -

- This project will increase irrigation efficiency, improve water quality through reduced run-off and deep percolation and assist farmers implementing Best Management Practices. By developing a precise soil moisture reference standard for tensiometers; updating in field monitoring

and reading of tensiometers; and writing software for farmer's accessibility to web-page to run irrigation scheduling program. The project will be completed in 2002.

ECAO - Best Management Practices (BMPs) within the Purgatorie River Water Conservancy District's Boundaries - Natural Resource Conservation Service (NRCS)/Spanish Peaks and Purgatorie Soil Conservation District -

- Through a cooperative agreement, water conservation and management are being developed and installed on individual farms throughout the PRWCD. Type of BMPs is land leveling, gated pipe, and surge valves. The program is administered through the local NRCS. In 1996 three farmers participated, the program has reached 55 of the 172 farmers within the district. The farmer provides 40% of cost for improvements.

ECAO - Cooperative Program of Water Resources Data Collection - Southeastern Colorado Conservancy District -

- This program is in cooperation with the USGS. The USGS monitors three water measurement sites along the Arkansas River. This information helps to manage the movement of water throughout the Fryingpan-Arkansas Project. This program is in its third year. Reclamation provides financial assistance to SE on a yearly basis depending on the request.

ECAO - Acreage Verification System (AVS) – RWCD -

- Through a cooperative agreement with the PRWCD development and installation of an AVS database is occurring. The AVS will allow the PRWCD to manage the use of water in the district. The database will allow queries and reports to be produced. The database is to be completed by the end of the 2002 Fiscal Year.

NKAO – Water Measurement Improvements -

- The NKAO has provided assistance to various districts to improve the accuracy of water measurement. This includes the construction of ramp flumes at the head of canals, providing equipment for remote monitoring, portable pipe flumes for new lateral measurement sites, and purchased ultrasonic meters that Districts can use to check existing propeller meters.

- Technical and financial assistance was provided to the Mirage Flats Irrigation District for canal automation. The District has currently has three automated canal sites, and numerous remote monitoring sites. Advances in automation equipment, along with increases in the number of manufacturers of this equipment, have lowered the costs of implementing these projects. Numerous Districts in the NKAO area have expressed interest in initiating canal automation projects.

OTAO – Foss Reservoir Master Conservancy District – Plan Implementation

- Provided financial assistance for the purchase of seven flow meters and computer



Close-up of 30 inch magnetic flow meter at Foss Water Treatment Plant

equipment. This will facilitate water management by improving water measurement and accounting of releases from the reservoir, utilized within the water treatment plant, and delivered to rural customers.

OTAO – Mountain Park Master Conservancy District -

- Financial assistance was provided to assist with the implementation and replacement of the district’s outdated telemetry system. This will improve the management of the conveyance system by making water level and discharge data remotely available at the district office.

OTAO - Donna Irrigation District –

- Financial assistance was provided towards replacement of the Lower West Main Canal

gate. The previous gate was cable driven, and vandals continually cut the cables causing significant water loss. Resulting water savings have benefited districts throughout the Rio Grande Valley by increasing available water.

OTAO - La Feria Irrigation District -

- Implementation assistance included replacement of leaky pipes and the purchase of five saddle type flow meters to measure deliveries to farm turnouts.

OTAO - Lugert-Altus Irrigation District -

- Financial assistance provided to purchase PVC pipe and flow meters to convert several laterals from open ditch to pipeline. This improve the District’s delivery efficiency, and decrease water loss to seepage and evaporation. The flow meters will enable District to better monitor and account for irrigation deliveries.

OTAO - Tom Green Irrigation District -

- Provided cost-sharing assistance for construction of two buried pipelines. Resulting benefits include improving the District’s delivery efficiency, and decreasing water loss to evaporation. Flow meters to be installed will provide continuous water measurement and enable the District to better monitor and account for irrigation deliveries.

OTAO - Central Oklahoma Master Conservancy District -

- Financial assistance was provided for the purchase of an ultra-sonic flow meter and upgrading of the District’s outdated telemetry system. Financial assistance was also provided to complete an engineering study of the conveyance system, including a pressure test of the Norman Aqueduct and Reservoir Pumping Plant.

WYAO - Pump Purchases and Installation - Paxton Hershey Water Company -

- Reclamation provided financial assistance to the Paxton-Hershey Water Company to install two pumps at high elevation delivery locations. Funds were utilized for site preparation and construction of concrete structures and purchase and installation of pumps, motors, and associated electrical equipment.

WYAO - Water Accounting Improvements -

Midvale Irrigation District -

- Reclamation provided financial assistance for the purchase of software to provide more effective accounting of water deliveries. The accounting program will help identify dysfunctional measurement devices and canal reaches that are candidate for seepage control.

WYAO - Long-Throated Measurement Structure Demonstration - Heart Mountain Irrigation District -

- Funds were provided for the installation of three long-throated measurement structures within the district. Reclamation also provided assistance in designing the three long-throated measurement structures. The measurement structures will allow better monitoring of lateral diversions, and improve management and accounting of irrigation diversions.

WYAO - Low Flow Check Structures Installation - Gering Fort-Laramie Irrigation District -

- Funds were provided for the construction of two check structures on the Fort-Laramie Canal. Completion of this project will allow the district to reduce early and late season diversions and conserve the limited water supply of the North Platte River system.

WYAO - Ramp Flume and Remote Monitoring - Farmers Irrigation District -

Funds were provided for the construction and installation of a long-throated measurement structure, remote flow monitoring equipment, and the installation of automation equipment at the Tri-State Diversion Dam. Completion of this project will provide automation, remote monitoring, and control of diversions made into the District's main canal, the Tri-State Canal.

WYAO - Pressurized Pipeline Installation - Gering Irrigation District -

- An agreement was entered to provide financial assistance to purchase equipment to pressurize a pipeline and provide water measurement to the 19 turnouts served by pipeline. Materials were also purchased to construct a trash rack to protect operations of the flow meters. This project will improve water measurement and allow the District to properly regulate irrigation water deliveries and diversions to water users.

WYAO - Purchase Water Measurement Equipment - Mitchell Irrigation District -

- Reclamation entered into a cooperative agreement with the District to provide funds for the purchase and installation of water measurement equipment. Reclamation will provide technical assistance, at the request of the district, regarding the selection and installation of appropriate water measurement equipment.

WYAO - Portable Ramp Flume Demonstration - Gering-Fort Laramie Irrigation District -

- Reclamation entered into a grant agreement with Gering-Fort Laramie Irrigation District to provide materials and technical assistance for the installation of three adjustable ramp-flumes. They will be installed on three laterals, which divert water from the Fort-Laramie Canal. Currently, diversions to the lateral are not measured.

————— **Water Conservation Recognition** —————

For FY2001, area office coordinators nominated several entities that demonstrated leadership in advancing water use efficiency in the Great Plains Region.

Paradise Valley Irrigation District – Milk River Project was nominated to receive the Commissioner's Award for exemplary achievements in the area of water measurement to improve operational efficiency, and for selection of future goals to improve overall project efficiency, reducing salinity, and investigating methods to reduce stream-bank erosion.

Four other entities were selected to receive the Regional Director's Award for exceptional work accomplishment in water conservation:

- Buford-Trenton Irrigation District
- Kansas-Bostwick Irrigation District No. 2
- Natural Resource Conservation Service, Trinidad, Colorado
- Spanish Peaks / Purgatoire Soil Conservation District

Vision for the Great Plains Regional Water Conservation Program

VISION

In cooperation with water users, states, federal agencies, local entities and others, we in the Great Plains Region should direct our water management and conservation efforts towards helping water users identify and implement water efficiency improvements that will improve the overall beneficial uses of water and related resources.

Through proactive but judicious use of technical and financial assistance, technology transfer, and education programs, we will work in the interest of the public good by:

- Helping to remedy current problems by providing tools (education, training, outreach) to help resolve, and prevent, similar problems in the future,
- Find ways to provide water for beneficial uses which are presently not being met,
- Reducing negative impacts resulting from inefficient water operations, and
- Improving, enhancing or enlarging current benefits for present beneficiaries.

Through successful implementation of the WCFSP, we in the Great Plains Region will demonstrate to the water user community, the public, states, other partners, and staff, our capability and sincere commitment to managing and protecting the water and related resources to which we are entrusted in an environmentally and economically sound manner.